

Meeting Summary

Vendors Meeting - Wet Weather Flow Technologies Pilot

October 12, 1999
Hilton Riverside, New Orleans, LA

(See [Attachment 1](#) for Attendance Record)

Introductory Remarks

The Wet Weather Flow (WWF) Technologies ETV Pilot hosted a Vendors Meeting on October 12, 1999 in New Orleans, LA.. The purpose of the meeting was to discuss the progress of the EPA's Environmental Technology Verification (ETV) Program and obtain vendor input on the direction of verification testing. The morning session focussed on open-channel flow meters for wet weather applications, while the afternoon session addressed high-rate treatment technologies for wet weather flows. A participant list is attached.

Morning Session [8:00 AM -11:30 AM]

ETV Overview

[Presentation](#) (PDF, 276K)

John Schenk, NSF Pilot Manager, kicked off the morning session by presenting an overview of the goals and status of the overall ETV Program. John also reviewed the objectives and focus of the WWF Technologies Pilot, explaining that the Stakeholder Advisory Group recommended that the WWF Pilot verify flow monitoring equipment to assist prospective buyers in selecting a product for use in wet weather collection systems. Kevin Smith, NSF Project Coordinator, described the Pilot processes for protocol development and testing. John stressed the fact that participation by vendors in ETV verification is voluntary and that a separate verification report will be issued for each participating vendor. An objective third party report issued by EPA and NSF should serve as an excellent tool for vendors in marketing their product for stormwater and CSO applications. John presented an overview of the costs associated with flow meter verification and the availability of pilot funds to cover such costs. During the pilot phase (through 2001) pilot funds will offset the majority of the total cost of verification, but participating vendors will be responsible for covering a significant portion of the actual testing costs. A firm estimate of the expected costs to vendors will not be known until the protocol is finalized and test locations are defined. John also noted that the vendor will need to supply the flow meters for the duration of the verification. Technical support from vendor personnel will also be necessary.

Flow Meter Verification

John Schenk presented the status of pilot activities for the verification of flow meters for wet weather applications. He explained that verification would involve both laboratory and field verifications and that protocols for each were being developed under the guidance of the Technology Panel on Flow Monitoring Equipment.

Steven Barfuss of the Utah State University Research Foundation is serving as a subcontractor to the WWF pilot for the development of the laboratory protocol and the BPR Consulting Groupe of Montreal is serving as the Field Protocol development subcontractor. After the Technology Panel reviews and approves the draft Protocol, it will be sent to the WWF Stakeholder Advisory Group and made available to the general public for review. The goal is to initiate testing in January 2000 and have the first verification reports issued by September 2000.

Laboratory Verification

[Presentation](#) (PDF, 358K)

Steven Barfuss presented a summary of the Draft Laboratory Protocol and generated discussion among attendees on its critical elements. Steve also presented the facilities available at Utah Water Research Laboratories that would be made available to vendors choosing to participate. Steve described the pipe sizes, slopes, and various hydraulic conditions and pipe set-ups required by the protocol. He explained that results would be reported as accuracy of flow, depth, and velocity recorded by the flow meter versus the actual values.

Steve discussed some of the challenges associated with the protocol. Because the test calls for using clean water, it is proposed that air bubbles be introduced to create the reflectors (in place of actual solids) needed for the proper functioning of Doppler-type flow meters. There has been concerns about whether the microscopic air bubbles will serve as a suitable reflector. It was suggested that other gases with better defined solubility and reflective properties in water be explored. Concerns were raised that the lab protocol does not call for testing flow meters under rapidly changing conditions and thus does not reflect where flow meters have the most difficulty in generating accurate readings. Steve explained that the field protocol will attempt to capture performance under variable flows, while the lab protocol is designed to verify the capabilities of the units under highly controlled conditions by comparing flow meter data to a well defined reference flow.

Field Verification

[Presentation](#) (PDF, 510K)

Elise Villeneuve of BPR Groupe presented an overview of the Draft verification Protocol under review by the Technology Panel. As suggested by the Technology Panel, the field protocol was developed with consideration of the facilities available for field testing flow meters at the Quebec Urban Community's combined sewer. The protocol calls for verifying performance (i.e., accuracy of flow, depth and velocity measurement) under dry weather, wet weather, backflow and surcharge conditions using actual rainfall events (weather permitting) or a simulated event using collected stormwater/sanitary waste. The protocol also calls for a more qualitative evaluation of installation, operation, and maintenance characteristics of the equipment, including data management and the associated software. Elise discussed the protocol's inclusion of an extended (6-month) test during which necessary O&M procedures can be evaluated.

Elise presented a schematic of the potential test site in a 42-inch combined sewer pipe where flows can be controlled using an upstream storage facility and a system of upstream and downstream gates. Possible locations of the proposed downstream gate were discussed. Based on the diagram, it was suggested that the location of test flow meters be relocated to at least 1000 feet upstream of an abrupt change in pipe slope that may create a critical depth flume, which is abnormal for a typical stormwater/combined sewer collector.

General Discussion

There was discussion among attendees about whether a standard battery of tests should be mandatory or whether the vendor should have the option of choosing which particular tests his units shall undergo. George Kurz who serves as the Technology Panel chairperson, stressed the importance of having a complete report on the overall performance of a flow meter and that it will be a disservice if the report was used to focus on a single indicator of performance such as flow accuracy under a single set of conditions. A question was raised as to whether the complete results of the test become public information and whether the vendor has control over the release of such data. John Schenk explained that because verification is completed using federal dollars the ETV program is designed for complete disclosure of performance related data. That said, John indicated that the Pilot is considering affording the vendor the option of withholding the report if the vendor reimburses the pilot for all costs associated with its verification.

Afternoon Session [1:00 PM - 4:30 PM]

[See attached attendance list](#)

ETV Overview

John Schenk opened the afternoon session with overview of the ETV Program and the WWF Pilot (see summary from morning session above).

Verification of High-Rate Inertial Separation Equipment

John provided an update and projected schedule for the verification of high rate inertial separation equipment, including chemically-enhanced separators and vortex separators used in the treatment of combined sewer overflows and collected urban stormwater discharges. John explained that separate verification protocols for the two technology categories are being developed under contract with XCG Consultants and review by the ETV Technology Panel on High Rate Separation. The pilot intends to coordinate efforts with the City of San Francisco which plans to conduct pilot testing of chemically enhanced separators and with New York City which has an on going evaluation of vortex separators.

George Zukovs of XCG Consultants presented an overview of the two protocols as they currently stand in Draft form. George highlighted the performance indicators that will serve as the basis for verification.

For chemically enhanced separators the primary performance indicators will be:

- percent removal of a list of pollutant parameters; and
- characterization of effluent water quality including effluent concentrations.

Influent and effluent will be monitored for a list of core parameters to include TSS, CBOD5, COD, Total P. . Depending on upon the claims of the particular vendor and the nature of the influent at the test site, several supplemental parameters may also be measured including metals, hydrocarbons, dissolved solids, and others. A verification report on chemically enhanced separators will also address the operational and maintenance parameters such as chemical usage, waste sludge volume, labor requirements, power requirements and others. The protocol calls for using actual or simulated combined sewer flows.

George Zukovs also described the Draft Protocol for evaluating high rate vortex separators used for treatment of CSO/stormwater in a collection system. Performance indicators will be the removal of a core list of parameters including TSS, floatables, settleable solids, COD and BOD. Performance will also be characterized by concentration factors and treatment factors that take into account the untreated under flow that bypasses the vortex mechanism.

Participants voiced no objections to the verification approach outlined in the draft protocols.

Verification of High Rate Disinfection Technologies

[Presentation](#) (PDF, 138K)

John Schenk initiated the discussion of high rate disinfection of wet weather flows by explaining that the pilot was seeking to verify performance of two distinct categories of disinfection technologies: (1) Induction Mixers and (2) UV Treatment systems. The Technology Panel on High Rate Disinfection has been overseeing the protocol development process.

Induction Mixers

For Induction Mixers, a Verification Protocol is available as a second Draft for review by the Technology Panel. The protocol was prepared by Moffa and Associates and calls for a laboratory determination of the mixing zone volume by introducing a conservative tracer at the impeller and measuring the tracer concentration downstream of the impeller. Tests will be performed for 3 different velocities and mixing times for each induction mixer tested. Parties interested in reviewing the Draft Protocol were encouraged to contact NSF. Kevin Smith explained that thus far two vendors have expressed interest in verification and that finalization of the protocol should be complete by the end of the year.

UV Disinfection Technologies

Karl Scheible of Hydroqual, Inc. was introduced as the chairperson of the Technology panel and the contractor responsible for preparing the draft protocol for the verification of UV disinfection technologies designed for the high rate treatment of wet weather flows. Karl provided an overview of the issues that the Technology Panel has been wrestling with to date. Initially the protocol focussed on two main issues: dose delivery efficiency at transmittance levels representative of typical wet weather flows (20-30%), and the ability of a system to remain clean when exposed to dirty WWF influent so as to continue delivering the design dose. The Panel is now working to determine if additional testing is necessary to characterize the extent to which dose delivery and disinfection efficacy associated with a UV system design is affected by influents with high solids/particulate concentrations. Karl explained that this has resulted in a verification approach with 3 possible testing regimes:

- Use of an MS2 phage assay in a clean water matrix adjusted to selected transmittance levels;
- Operation of the unit in a primary effluent stream for an extended period under intermittent flow conditions to assess the systems ability to maintain the quartz surfaces;
- Assess performance of system in treating actual pretreated wet weather flow. This requires a thorough characterization of the influent (likely primary clarifier effluent with standardized range of solids/particulate content). Samples of dosed effluent will be homogenized to determine if particulate shielded bacteria from the delivered dose.

Karl noted that facilities at the Rockland County (NY) Wastewater Treatment Plant and Spring Creek CSO facility in NYC are being considered as potential test sites and should accommodate the necessary tests. There was considerable discussion of the approach to testing being proposed. Vendors in the room expressed general support for the approach while raising several questions as well as concerns about the potential costs of such extensive testing. Upon completion, the next draft of the UV protocol will be made available to vendors and others who wish to provide comment.

Closing Remarks

John Schenk thanked all attendees for their participation and the meeting was adjourned.

Attendance Record

WWF Vendors Meeting New Orleans, LA October 12, 1999

Morning Session

Vendors

Brian Dawson, Isco Products
M. Natarajan, Renaissance Instruments
Clark Harris, Rocky Mountain Instruments
Greg Desantis, American Sigma
Michael Metcalf, MGD Technologies
Larry Marsh, Marsh McBirney, Inc.
Riyaz Jiwani, Nivus (America), Inc.
Roy Austin, Nivus (America), Inc.

Others

Steve Barfuss, Utah Water Research Laboratory
Elise Villeneuve, BPR Groupe
George Kurz, Consoer Townsend
Keith McCormack, Hubbell, Roth and Clark
Robert Hunter, Yellowstone Environment Science
Curtis King, Greater Vancouver Regional District
Mary Stinson, US EPA
John Schenk, NSF International
Kevin Smith, NSF International Stephanie Barrett, ICF Kaiser

Afternoon Session

Vendors

Miguel Gutierrez, Parkson Corp.
David Macauley, Mastrrr Co.
Peter Colak, UV Systems Technology
Scott Stein, US Filter
Dick Thomas, Aquionics
Bob Andoh, HIL Technologies
Bill Petrozzi, Trojan Technologies
Kelly Williamson, Aquashield, Inc.
Gary Van Stone, Calgon Carbon Corp.

Others

George Zukovs, XCG Consultants
Karl Scheible, Hydroqual, Inc.
Greg Kuchy, Sanitary District of Decatur, IL
Meei-Lih Ahmad, City and County of San Francisco, CA
Randel West, CDM
Ed Fernbach, CDM
Rod Frederick, US EPA
Evan Fan, USEPA
Mary Stinson, US EPA
John Schenk, NSF International
Kevin Smith, NSF International
Tom Stevens, NSF International
Stephanie Barrett, ICF Kaiser
